PERSONAL INFORMATION

Ákos József Nyerges

nyergesakos@gmail.com
http://group.szbk.u-szeged.hu/sysbiol/

Date of birth: 12. June 1990.

EDUCATION

2012–Present
MSc in Biology
University of Szeged - The Faculty of Science and Informatics, Szeged (Hungary)

2009–2012
BSc in Biology
University of Szeged - The Faculty of Science and Informatics, Szeged (Hungary)

2005–2009
Vasvári Pál Secondary School - Specialization in English, Székesfehérvár (Hungary)

WORK EXPERIENCE

2010–Present
BSc and MSc student & Research assistant
Hungarian Academy of Sciences, **Biological Research Centre**, Institute of Biochemistry, Synthetic and Systems Biology Unit,

Laboratory of Microbial Experimental Evolution & Laboratory of Genome Engineering
Temesvári krt. 62., Szeged (Hungary)

Development of new strategies for microbial evolutionary studies

2006-2010
Secondary school and undergraduate research student
Fejérvíz ZRt, Székesfehérvár (Hungary)

Investigation of Legionella contamination in water supplies and qPCR based water quality testing

LANGUAUGES

ENGLISH B2

RESEARCH EXPERIENCE AND ACHIVEMENTS

Project **Investigation of the presence of Legionella sp. in the water supplies of Székesfehérvár**

Conference attendance (Oral presentation in hungarian)
Magyar Hidrológiai Társaság XXV. Országos Vándorgyűlése, 2007., Tata, Hungary
Scientific Students' Associations Conference (TUDOK) 2008., Microbiology session: 1. place

Project — **Development of a low cost real-time qPCR machine**

Conference attendance (Oral presentation) and Award

Scientific Conference of Students (University of Szeged), Molecular biology session, 2010: 1. place
XXX. National Conference of Scientific Students' Association, Biochemistry session, 2011: 1. place

Project — **Development of new strategies for microbial evolutionary studies**

Conference attendance (Poster presentations):

IX. Magyar Genetikai Kongresszus és XVI. Sejt- és Fejlődésbiológiai Napok, 2011., Siófok, Hungary
4th European Conference on Chemistry for Life Sciences, 2011. Budapest, Hungary
FEBS 3+ Meeting (From molecules to life and back), 2012., Opatija, Croatia
Gordon Research Conference, Synthetic biology: (Re-)constructing and Re-programming Life 9-14 June, 2013., Mount Snow Resort, West Dover, USA
BioBricks Foundation SB6.0: The Sixth International Meeting on Synthetic Biology 09-11 July, 2013., London, UK
Genome Engineering & Synthetic Biology: Tools and Technologies, 16-17 September, 2013., Gent, Belgium

Conference attendance (Oral presentations in english):

Hungarian Molecular Life Sciences 2013., Siófok, Hungary

Straub-days; Hungarian Academy of Sciences, Biological Research Centre, 2013., Szeged, Hungary

Research objectives

I have gained my interest in molecular biology during my secondary school years, when I had the exceptional opportunity to work with state-of-the-art technologies of quantitative DNA detection and bacteriology. Later on, during my first year of BSc on the University of Szeged, the promising field of synthetic biology inspired me to join the laboratory of Genome Engineering and the laboratory of Microbial Experimental Evolution in BRC.

Here, while focusing on the rapidly developing field of bacterial genome engineering, I came into contact with systems biology, which helps us to understand the principles and multi-level properties of large cellular systems. My work currently targets this connection between these two complementary disciplines, in order to enable rapid data collection and modelling for evolutionary systems biology.

My current and future research focuses on the development, fine-tuning and application of a new method for accelerated evolution. By using targeted modification of the host's genetic information to speed up mutation rate at selected genomic regions, we can either study dynamics of evolution or the phenotypic impact of mutations under various environmental stressors (e.g. antibiotic treatments). To achieve this and to design a more predictable platform for our further studies, we are currently removing the major Achilles' heel of technology, the detrimental off-target effects arising from the necessary inactivation of DNA repair during the process.

By the application of this method, my main aim is the investigation of uncharted cellular processes and interactions in bacteria, which can result in resistance against applied antibiotics during clinical therapy. I hope that mapping these interactions will also help medical science and drug development to cope with the impending crisis of antibiotic resistance in pathogenic microorganisms.